



DECEMBER 1987

COLORADO SPRINGS,  
COLORADO

PIKES PEAK RADIO AMATEUR ASSOCIATION, INC.

P.O. Box 16521  
Colorado Springs, CO 80935

FIRST CLASS MAIL



# Ø BEAT



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**ZERO BEAT** is published monthly in the interest of the members of the Pikes Peak Radio Amateur Association, Inc., P.O. Box 16521, Colorado Springs, Colorado 80935. Cost is 50¢ per month for non-members or a \$4.00 per year subscription. Permission is given to reprint articles or excerpts provided credit is given. Deadline for submission of articles is the 21st of the month. Classifieds accepted anytime.

The Pikes Peak Radio Amateur Association meets on the second Wednesday of each month at Giuseppe's Depot Restaurant at 10 S. Sierra Madre at 7:30 p.m. All amateurs and interested parties are invited to attend.

Editor: Keith Goobie NYØT, 5335 Coneflower Ln., Colorado Springs, CO 80917 637-1525

## CQ OSCAR 10

It was much to my delight that the sleeping OSCAR 10 satellite was brought back to life after a long hibernation to recharge its batteries. Well, it seems to have paid off nicely! Conditions on the satellite have been excellent since it was turned back on around the 16th of November.

I have been on the satellite a few times since it was turned back on and am glad to report that many old users are beginning to re-appear on the satellite. To date, I have made contacts in Canada & the United States on the domestic front and France and Germany in Europe. I was listening the other night and was hearing stations on from South Africa and South America. My longest / shortest contact after having my signals travel about 20,000 km up to the satellite and then back down was with a station in Littleton, CO! I could have down the job on 2m or 70cm direct, hñ

Now what does it take so that you may be able to listen to OSCAR 10 (or some of the other satellites for that matter)? The main ingredients are going to be as follows:

a. a 7 to 11 element yagi, preferably one that is circularly polarized,

b. a pre-amplifier to boost the weak signals that come in from the satellite, especially when it is about 40,000 km away,

c. a good quality 2m ssb receiver, and

d. if your antenna is going to be more than 100 ft away from your receiver, then it is highly recommended that you use hardline/helax (such as 1/2") or low loss cable such as 9913. This is one investment that you will not regret.

Now that you are all fired up about OSCAR 10, the next question is going to be what frequencies should I be listening on? Included in the following list are the downlink frequencies and the associated uplink frequencies on 70 cm. Modes of operation are USB and CW (FM is discouraged as it drains too much power from the satellite).

## AMSAT OSCAR 10

Mode B	Uplink	Downlink
	435.030	145.975
	435.045	145.960
	435.050	145.955
	435.060	145.945
	435.070	145.935
	435.080	145.925
	435.090	145.915
	435.100	145.905
	435.105	145.900
	435.110	145.895
	435.120	145.885
	435.130	145.875
	435.140	145.865
	435.150	145.855
	435.160	145.845
	435.180	145.825

Mode L (1269 up and 436 down) is no longer operational since the cpu failure on board the satellite.

CONT'D ON PAGE 6

## MONTHLY MEETING

The next regularly scheduled meeting of the Pikes Peak Radio Amateur Association will be held on Wednesday December 09 at 7:30 pm at Giuseppe's Depot at #10 S. Sierra St.

## "VIEW FROM THE PEAK"

by George Hinds, N8CIX

### AWAKE BEFORE DAWN - SEARCH AND RESCUE CALLS AGAIN...

The time is 5 a.m. - that noise is the telephone ringing. It's Bob Bergman, WBØFLU on the phone. We're needed to assist Teller Co. Search and Rescue teams who are enroute to a reservoir south of Victor. Seems as though a 72 year old man who went fishing alone the day before had not returned by 10 p.m. and was then reported missing. Temperatures overnight were in the teens.

Bob departed to accompany the search team; I headed out later and picked a high spot where I could relay traffic as required to and from Woodland Park. No sweat - a hill several miles to the west gave me the elevation to do the job. While we could have likely handled the task on the .97 system without need of relays, .97 was down.

Ft. Carson dispatched a Huey UH-1H helicopter to aid the ground searchers. At 8:40 a.m. the chopper spotted the man. Ground teams found the elderly gentleman alive but with facial lacerations. It seems he had fallen over a ledge and down a rocky slope (luckily not an abandoned mine shaft!). Apparently dazed and disoriented, he wandered until dark, slept in the cold (luckily he had a lined jacket) and at dawn had the composure to stay in place until found. It was time for me to head for home and breakfast, after proving again that amateur

radio serves the public.

The old-timer soon joined his two sons who had come out to search and one could watch the warmth of that reunion; "amateur radio public service" took on even more importance to those of us who had a part in this incident. Hopefully, should you be called upon, you'll offer your services "in the public interest, convenience and necessity."

\*\*\*\*\*

### HOW NOT TO RESPOND TO A CALL FOR HELP...

In late September, I passed the scene of an injury accident driving up Ute Pass between Manitou and Cascade with a motorcyclist lying beside the road. I was in the left lane in heavy traffic and unable to safely stop. The ham who answered my call for state patrol help refused to make the call because I had not stopped at the scene. I switched to another repeater; help was soon enroute.

Later I called CSP and CSPD; they will respond to emergency calls; in fact, they're obligated to do so. In 17 years of calling police in emergencies, I have never had a refusal to respond. Please note I said emergencies!

It seems some amateurs have experienced a problem with 911 operators refusing to dispatch assistance if the person initiating the report did not stop at the scene. If you encounter such a problem, simply call the proper department direct, bypassing 911. Why argue? Don't waste time.

The important thing to do is help: call! If it's a long distance call, dial 0 for operator, state you have an emergency call and ask to be connected to the police or fire agency you want to reach. It'll be done and, in my experience, without tolls. I hope that if you hear a call for help, you'll make the humane choice - handle it quickly as best you can.  
\*\*\*\*\*

### NEAT IDEA - WHY NOT HAVE IT HERE IN THE STATES?

Bob Whipple, NØFCR, of Divide, CO., has recently returned from a trip that included Nova Scotia. He found, in going through the official tour guidebook distributed by the province, that a page was devoted to listing amateur radio repeaters by city, frequency and offset, plus a map pin-pointing each repeater location in the province for ready location by visiting hams.

Sure sounds like an idea whose time has come; another good idea would be to have the local "public service" or "emergency" repeater call and frequency displayed on city "welcome" signs, just as is done with the Lions, Rotary, Kiwanis, etc. After all, repeaters that are called upon for emergency response action are as much public service groups as are the usual organizations found on city "welcome" signs, right?  
\*\*\*\*\*

Well, another year ends. I enjoy writing for you; I hope you find it interesting and informative. To you all, in friendship: HAPPY & SAFE HOLIDAYS!!  
George N8CIX & Thelma Hinds

ANTENNAS  
by Chris Smith NØGE

Last month's column discussed the development of the antenna analysis program MININEC3. This month the column continues the short series on MININEC3 with a look at the purpose of the program.

An antenna analysis code is a tool for an antenna designer much like a level is for a carpenter. A level can't plumb a wall- the carpenter has to do that. The use of the level makes the job easier by indicating when the desired condition is met. In the same way, MININEC3 can't design an antenna, but it can indicate when your antenna design meets the conditions you want it to. Just as importantly, it can indicate when a design is faulty, before you go to the trouble to build it.

In general there are three properties that an antenna is designed for. Within a given space or size, the antenna should attain a certain gain (due to a combination of directivity and efficiency) and be within a certain impedance range (usually specified as a VSWR). MININEC3 computes the gain and impedance of the configuration of wires that you describe to it at the frequencies you specify. You must choose where to put the wires and whether or not they fall in the permissible space.

Then MININEC3 will analyze the antenna to tell you the gain and impedance. It's not a trivial task for a computer to do even that. For a given configuration of wires, the gain and impedance depend critically on how the currents in the antenna and ground distribute themselves when the power is applied.

MININEC3 solves this problem by dividing each wire up into short sections, called segments, and assigning an unknown current to each one. In a lengthy computation, the program uses the laws of electromagnetics to relate each unknown current to all the others, and finally to the driving voltage. It then uses

the (now known) currents to figure the antenna pattern and the impedance at the drive point. The whole process is fraught with errors. The computations are not done perfectly. Though each one may be done with great precision, the tens of thousands of them that must be done in a typical MININEC3 case add their toll. More importantly, the model you describe is never exactly the real case. Indeed, real life is complicated, and invariably simplifications must be made in order to arrive at a useable computer model. The skill with which the simplifications are made often dominate the accuracy. So despite the application of technology to antenna design, there is still room for an artist's touch.

If you from time to time find yourself to be an antenna designer, and you have MININEC3 to use, be persistent and patient. You have gained a powerful tool, so take some time and learn to use it skillfully.

I'm glad to report some progress on my all-band rhombic. I've completed the 800 ohm balun using what I've learned from "Transmission Line Transformers," the new ARRL publication by Jerry Sevick. (I highly recommend this book to anyone building a balun or RF transformer.) I've put up the balun and have about half the wire strung. If I can only find a way to move the tall trees to where I need them, I'll be done in no time!

#### Transformer Oil

Where do you get transformer oil in Colorado Springs? Having built a Heathkit "Canterna" dummy load recently, the answer to this question was important to me.

A phone call to the city utilities department was pleasant, but did not produce any transformer oil for me. After a few more calls I found the following:

You can get transformer oil at:

Kistler Electric Co.  
1001 South Royer  
Colorado Springs, CO 80903  
(303) 632-7671

## VHF & ABOVE NEWS

by NKØP

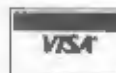
With Christmas nearly upon us it's time to start thinking about the January VHF Sweepstakes. This years contest is set for the weekend of January 23-25 starting at 1900UTC Jan. 23 and ending at 0400UTC Jan. 25. Remember this Novices can play in the VHF contests. Look for novice participation on 223.5MHZ FM and above 222.1 CW & SSB. Significant novice efforts will be recognized with a certificate. Last year we had a club entry. If you are interested this year give me a call and I'll put a list together and send it in to ARRL. Note: This list needs to be sent in before contest time.

The December meeting of the Front Range Microwave Society will be December 12th at Glen Eyrie castle. A tour of the 67 room tudor style castle will start at 2:00 pm. This will be a great opportunity to meet your fellow microwave enthusiasts and take in this historic tour. The purpose of this meeting is primarily social but there will be plenty of time to talk ham radio. XYL's should enjoy this "meeting"!! If you think you might come please RSVP KXØØ Lauren Libby 593-9861 as this tour is arranged especially for us.

Meteor shower predictions for December are: 1) Geminids 12/14/87 peak at 1100UTC 2) Ursids 12/22/87 peak at 1000UTC Copys of the papers presented at the Central States VHF conference have been published by ARRL. To obtain a copy send \$10 plus \$2.50 postage to ARRL Headquarters.

Activity locally on 144.200 USB is on the rise. An informal group meets at 1900 local time each Monday. Stations from Kansas, Wyoming, Colorado, Oklahoma, Texas, and New Mexico can be worked so give a listen and see if you can stretch your distance record on CW or SSB.

That's the news for this month and 73's to 1987. Hope Santa brings everyone a ham radio goodie! 73's C U on the bands...Ron



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WALKINS: Allowed  
TALK-IN: 146.37/97

#### NEEDED

1. Original FCC license, if any
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4. \$4.55 check or M.O. payable to ARRL/VEC
5. Completed FCC form 610
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101 Uses for a Dead HT  
by Phil VE1ARC

Handi-Talkies (HTs) have their place at hill climbs and public service events. Other times, they are not a very good substitute to a legitimate rig. So when you decide to chuck yours, here are some good uses for it:

1. Give it to Harvey W1JU who has a lot of experience with dead HTs. He used one for a year.
2. Give it to a taxi company, or the police, or any commercial service. It will receive all those frequencies regardless of the frequency it's on.
3. Give it to a eye cataract surgeon so he can lend it to his potential clients.
4. Connect it to a battery charger as a dummy load.
5. Connect it to a speaker-mike if you want to ensure it is totally unintelligible.
6. Attach it to your belt as a status symbol. Don't forget the speaker-mike and the helmet-mounted antenna.
7. Give it to Bud N0DDF so he can operate QRP and cause QRM. Oh, I forgot Bud, a dead HT is already QRT.
8. Sell it, throw in an additional 25 cents and get yourself a coffee.
9. Give it to your XYL if you want to make sure she never gets into ham radio.
10. Put it in the garbage with a bunch of your dead 807s.
11. Leave it in the front seat of your car in plain view in hopes that someone will steal it (rather unlikely).
12. Bring it to homebrew night and claim it is something that an amateur builds.
13. Give it to your dead cat who has about as much use for it as anyone.

COMMITTEES

The following represents the list of those who volunteered to fill in on the various club committees.

ACTIVITY COMMITTEE

Renay Borst KA0ROY  
Jeffrey Boyes KA0ZDY  
Ronald Morris KA0ZHO  
George Lewis N0HXI

PUBLICITY COMMITTEE

Karen Honer N1FED  
E. J. Lund KD0NB  
Don Ross NL7CO  
Don Hohisel KE0GJ

MEMBERSHIP COMMITTEE

Jody Borst KA0ROZ  
Doug Brower N0HJT

AUDIT COMMITTEE

Les Borst KC0NC  
Chris Smith NX0E

TECHNICAL INSTRUCTION

Harley Hansen KC0TQ  
Nick Hulbert KG5N  
Bud Libengood N0DDF  
Max Stafford KD0EL  
Bob Haggart N0CTV  
Ray Uberecken AA0L

RFI COMMITTEE

Ron Deutsch NK0P  
Bdale Garbee N3EUA  
Jeff Boyes KA0ZDY  
Ray Uberecken AA0L

PROGRAMS & ENTERTAINMENT

Malcolm Bente KE9S  
Karen Honer N1FED

CQ OSCAR 10 (cont'd)

Very shortly, in the mid-March timeframe, another satellite similar to that of OSCAR 10 will be launched by Arianespace. It will have many of the features of OSCAR 10 including some new ones that will satisfy those packet radio users especially!

The following is a summary of the features that will be carried aboard the Phase 3C satellite (it acquires an OSCAR # when it becomes a spaceborn object)

- a. Mode B: 70 cm up, 2 meters down
- b. Mode JL: 24cm and 2 meters up, 70 cm down
- c. Mode S: 70 cm up, 13 cm down
- d. RUDAK: 24 cm up, 70 cm down.

RUDAK is packet style BBS operation and is being developed by AMSAT DL. More details will come on its its operation later.

That all for now.....73 Keith NY0T

# OEM PARTS

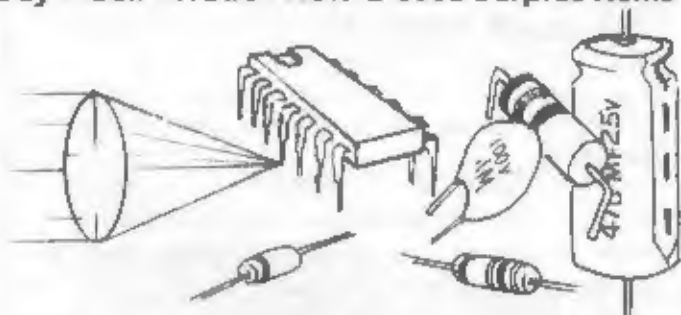
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## VE Test Results

Congratulations to those who recently upgraded during the VE test session of 14 Nov. 1987.

Name	Call	Before	After
Frances Vrooman	KAØZTC	Novice	Tech
Robert French	None	Unlic.	Tech
Wayne Stephens	None	Unlic.	Tech
Charles Bayless	KAØHKW	Novice	Tech
Donald Grider	KBØBEN	Novice	Gen
Lindsey Fisher	NØIMK	Tech	Gen
Gene Albert	NØIDU	Tech	Adv

The following is a composite of the VE TEST:

Elements	1A	1B	2	3A	3B	4A	Tot
Given	2	4	1	5	2	1	15
Passed	2	3	1	5	2	1	14
Percent	100	75	100	100	100	100	93

Total attended 8. Total upgrades 7  
Percent upgrades 88

Upgrades by class 4T, 2G, and 1A

The next test session will be held on 13 Feb. 1988

Pete NØLA

## ANTENNA'S IN GENERAL

Some times when I work very low frequencies, The noise is so high I just can't pull out the weak stations. When I moved to Colorado, I promised myself an antenna that could do the job. Since the lot I live on is not large enough for a BEVERAGE system, I went to the next logical thing; A CLOSED LOOP. The most important thing is to get as much wire out as possible; for capture area. The next most important thing is to keep it close to the ground. Now I should say at this time, these antenna's are not good for transmitting. True a good tuner could load them but, They are lousy for transmitting.

The key here of course is we want to listen, not talk. I will discuss transmitting antennas in future articles.

Before I did anything else I measured my back yard and planned the layout of my future system. I decided I would look to a verticle system, for transmitting and have the verticle in the middle of the yard. I also kept in mind that it would also be important, to erect the verticle so that if it fell it would not crash into my neighbors yards or houses. No power lines nearby to bother with, so they are not a consideration. I have seen a high tower fall into 18,000 volt lines, wow what a job to free that mess, then a lot of work to rebuild the tower again. Never work alone with towers, they can kill.

Well I found out the sides of the yard where 70 feet on each side. How about that, four times 70 = 280 feet, isn't that a full wave on 80 meters. That would be perfect for the loop, I would have a half wave on 160 meters.

Finding some partial spools of TNM #12 copper wire, I was able to purchase some 900 + feet for about \$22.00. Why so much when I only needed 280 feet for the loop? I needed a counterpoise for the verticle. Next I went to a local Hardware store and purchased four eight foot 2x2's, 50 feet of rope, four pulleys and eight eye hooks. I put the pulleys on one end of each 2x2. At the six foot mark below the pulleys I placed the other eye hook. I then cut the rope into 12 foot lengths and strung each length through each pully, tying one end of each line to the lower eye hook. To each of the other ends I tied an insulator. I fastened the poles to the fence line, one at each corner, making the poles about 10 feet high at the tops.

I decided to current feed the loop so the majority of the signal lobes would be east/west. I also decided to feed the antenna with 300 ohm twin lead, garden variety type from Radio Shack. It's cheap, 100 feet is about \$6.00.

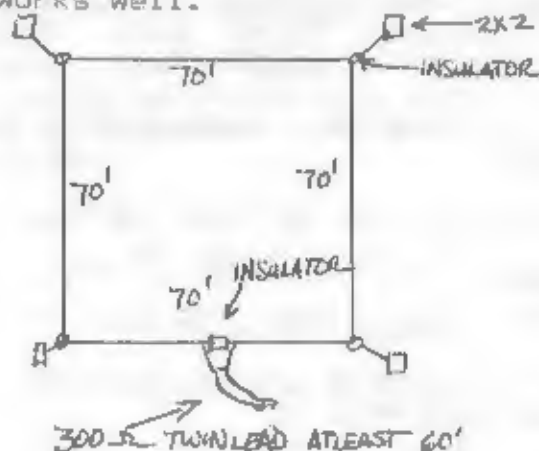
I began to string the wire, from one side of the feed point. By placing the spool at the feed point, hanging from the fence on a long screw driver, I pulled the wire to the first insulator. As I went through the first insulator, I realized the drag would begin to increase significantly as I continued to pull. So I would have to pull off some of the wire from the spool and then I could feed through the insulators with ease. This worked very well and in no time, I had completed stringing the wire and used an insulator to tied the ends together. With the loop together, it was time to see how the it would look when I hoisted the antenna into place.

I only had to remove some two and a half feet to get the antenna sufficiently taught.

I strung the 300 ohm twin lead to the house using standard TV insulators and making sure to rotated the twin lead so there was a twist about every 6 to 8 inches. I hooked the twin lead to the twin lead contacts in my 2060A Heathkit tuner. This takes the input through a 4 to 1 balun and into a "T" network of a capacitor, coil and capacitor. Then into a switch for antenna select.

Since the transmitting antenna was already in place I decided to simply use the tuning position on the transmitting antenna and simply switch to the Loop and compare receive signal to noise ratios. The results where marvelous.

On the average the loop was besting the transmitting antenna by some two db. There where times when I would find a weak signal with the loop and switch to the transmitting antenna and loose the signal due to the noise. Below is a picture diagram of my loop. I will try some new features come the spring of the year. For now I am satisfied it works well.



73's KDØSO PAUL



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MINUTES OF NOVEMBER GENERAL MEETING  
submitted by Al NØCHW, secretary

The general meeting of the Pikes Peak Radio Amateur Association was held at Giuseppe's Old Depot Restaurant, Wednesday evening 11 November 1987. The meeting was called to order by the president Ron NKØP at 19:30. There were 55 members and 8 guests present.

The minutes of the previous General Meeting and Board meeting were approved as printed in Ø-Beat.

Committee Reports

Note: Anyone wishing to help out on any of these committees, please contact the chairman at the phone number listed. Thank you for your support.

Treasurer - Bud NØDDF (599-7699):  
Previous balance was \$1871.99, income of \$144.00, expenses of \$753.11 leaving a balance \$1262.88.

Interference - Ron NKØP (593-8352):  
Nothing new to report.

Education - Harley KCØTQ (634-4555):  
5 Novices have graduated from the Novice course. Now holding a Tech / General class every Tuesday and Friday.

Publicity - NØCALL:  
A new publicity chairman is required by the Club. No special qualifications are required.

Colorado Council of Amateur Radio Clubs (CCARC) - Bud NØDDF (599-7699):  
Bud NØDDF and Oak KCØRL will attend a meeting in Denver on Sat 21 Nov 87.

Deaf and Blind School - Jim WA9ABB: (598-7543): Thanks to the many volunteers who assisted in installing the antennas. Some more work will be required. Another student has passed his code test, thanks to those that helped.

Centennial ★ ★ **REA**  
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**TAB BOOKS**

O-Beat - Keith NYØT (637-1525):

Thanks to all those who submitted articles (especially by modem or packet).

ARES - Al NØCHW (473-1660):

The ARES Net meets each Wed evening at 1900 local on the 37/97 repeater with 16/76 and 6.520 simplex as backups. Thanks to all those who have checked in so far and contact Don NL7CO or Al NØCHW for more info.

Public Service - Mike KØTER (636-1290):  
Nil

Old Business:  
Nil

New Business:

A swapfest will be held at the Jeffco Fairgrounds on Sun 29 Nov 87. All are invited to attend.

Congratulations to Ron NKØP (Pres) on his recent selection for promotion to Major in the Air Force.

On Sat 21 Nov 87, another TCPIP packet session will be held in Denver.

Irene AH6GF stated that the Colo Spgs Traffic Net could use more check-ins. It meets each evening at 2000 hrs local on 146.37/97.

Anyone wanting to set up a schedule with an amateur in Saudia Arabia, Jim WA9ABB knows of a ham there that would be interested in communicating with hams in the local area. The amateur is Bob NRØZ.

A discussion was held on reporting accidents to the the local authorities. Several hams have encountered problems when trying to use the 911 phone service. Based on others' experiences, it is much better to report accidents or crimes to the the local phone number of the agency you wish to contact.

The Cub Scouts are interested in getting hams as instructors.

#### Prizes - Keith NYØT:

Winners were:

WDØFHG John - Electronics Book  
NØLA Pete - Tool Sets  
NØCYR Jake - Antenna Book  
WDØBSZ Don - Repeater Directory  
WA9ABB Jim - Wintronic Gift Cert.  
KL7IBA Frank - Collection of Mags  
Saralee Hosea - OEM Parts Gift Cert.  
KAØYPX Frank - Cassettes  
WDØBSZ/KYL Mary- Advanced Lic manual  
KQØS Joe - Books

#### Program:

Bruce Lundebj (new Novice - no call) presented a program on the use of photocopiers to produce high quality circuit boards. It was a program that was enjoyed by all and offered some new insight on the construction of circuit boards for your home brew projects.

The meeting was adjourned at 2145

The next meeting will be 09 Dec 87.

#### MINUTES OF OCTOBER BOARD MEETING submitted by Al NØCHW

The board meeting was held on Monday 16 Nov 87 at the home of Nick KG5N. Meeting was opened by President Ron NKØP at 1900 hrs. Present were Bud NØDDF, Ron KAØZHO, Bdale N3EUA, Al NØCHW, Nick KG5N and Jake NØCYR.

The club has received the raffle licence application renewal should the club decide to sponsor a swapfest in May. So far, no one has stepped forward to volunteer to organize the swapfest. If there is no volunteer than the club faces the possibility of not running a swapfest this year.

The club liability insurance renewal was received and it has been paid for another year.

The propane generator that the club has will be checked out to see if it works and if it can be mounted on a trailer.

Should a volunteer step forward to organize the swapfest this year, it will be held on 14 MAY 88. To date, we have a firm commitment that Miley Radio will be there. This is a Saturday.

The program for December will be the slides of ham shacks of various club members. In addition there will be a video tape of the publicity shot done by Jim WA9ABB when he was interviewed by a local television station.

The Jan club meeting will be the annual Home Brew night. There will be prizes and all are invited to bring out their exotic gear.

There being no further business, the meeting adjourned at 2100 hrs.

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